

9-1

Skills Practice

Multiplying and Dividing Rational Expressions

Simplify each expression.

1. $\frac{21x^3y}{14x^2y^2} \cdot \frac{3x}{2y}$

2. $\frac{5ab^3}{25a^2b^2} \cdot \frac{b}{5a}$

3. $\frac{(x^6)^3}{(x^3)^4} \cdot x^6$

4. $\frac{8y^2(y^6)^3}{4y^{24}} \cdot \frac{2}{y^4}$

5. $\frac{18}{2x-6} \cdot \frac{9}{x-3}$

6. $\frac{x^2-4}{(x-2)(x+1)} \cdot \frac{x+2}{x+1}$

7. $\frac{3a^2-24a}{3a^2+12a} \cdot \frac{a-8}{a+4}$

8. $\frac{3m}{2n} \cdot \frac{n^3}{6} \cdot \frac{mn^2}{4}$

9. $\frac{24e^3}{5f^2} \cdot \frac{10(ef)^3}{8e^5f} \cdot 6e$

10. $\frac{5s^2}{s^2-4} \cdot \frac{s+2}{10s^5} \cdot \frac{1}{2s^3(s-2)}$

11. $\frac{7g}{y^2} \div 21g^3 \cdot \frac{1}{3g^2y^2}$

12. $\frac{80y^4}{49z^5v^7} \div \frac{25y^5}{14z^{12}v^5} \cdot \frac{32z^7}{35v^2y}$

13. $\frac{3x^2}{x+2} \div \frac{3x}{x^2-4} \cdot x(x-2)$

14. $\frac{q^2+2q}{6q} \div \frac{q^2-4}{3q^2} \cdot \frac{q^2}{2(q-2)}$

15. $\frac{w^2-5w-24}{w+1} \cdot \frac{w^2-6w-7}{w+3} \cdot (w-8)(w-7)$

16. $\frac{t^2+19t+84}{4t-4} \cdot \frac{2t-2}{t^2+9t+14} \cdot \frac{t+12}{2(t+2)}$

17. $\frac{x^2-5x+4}{2x-8} \div (3x^2-3x) \cdot \frac{1}{6x}$

18. $\frac{16a^2+40a+25}{3a^2-10a-8} \div \frac{4a+5}{a^2-8a+16} \cdot \frac{(4a+5)(a-4)}{3a+2}$

19. $\frac{\frac{c^2}{2d^2}}{-\frac{c^6}{5d}} - \frac{5}{2c^4d}$

20. $\frac{\frac{a^2-b^2}{4a}}{\frac{a+b}{2a}} \cdot \frac{a-b}{2}$

9-1 Practice (Average)

Multiplying and Dividing Rational Expressions

Simplify each expression.

$$1. \frac{9a^2b^3}{27a^4b^4c} \cdot \frac{1}{3a^2bc}$$

$$2. \frac{(2m^3n^2)^3}{-18m^5n^4} - \frac{4m^4n^2}{9}$$

$$3. \frac{10y^2 + 15y}{35y^2 - 5y} \cdot \frac{2y + 3}{7y - 1}$$

$$4. \frac{2k^2 - k - 15}{k^2 - 9} \cdot \frac{2k + 5}{k + 3}$$

$$5. \frac{25 - v^2}{3v^2 - 13v - 10} - \frac{v + 5}{3v + 2}$$

$$6. \frac{x^4 + x^3 - 2x^2}{x^4 - x^3} \cdot \frac{x + 2}{x}$$

$$7. \frac{-2u^3y}{15xz^5} \cdot \frac{25x^3}{14u^2y^2} - \frac{5ux^2}{21yz^5}$$

$$8. \frac{a + y}{6} \cdot \frac{4}{y + a} \cdot \frac{2}{3}$$

$$9. \frac{n^5}{n - 6} \cdot \frac{n^2 - 6n}{n^8} \cdot \frac{1}{n^2}$$

$$10. \frac{a - y}{w + n} \cdot \frac{w^2 - n^2}{y - a} \cdot n - w$$

$$11. \frac{x^2 - 5x - 24}{6x + 2x^2} \cdot \frac{5x^2}{8 - x} - \frac{5x}{2}$$

$$12. \frac{x - 5}{10x - 2} \cdot \frac{25x^2 - 1}{x^2 - 10x + 25} \cdot \frac{5x + 1}{2(x - 5)}$$

$$13. \frac{a^5y^3}{wy^7} \div \frac{a^3w^2}{w^5y^2} \cdot \frac{a^2w^2}{y^2}$$

$$14. \left(\frac{2xy}{w^2}\right)^3 \div \frac{24x^2}{w^5} \cdot \frac{xy^3}{3w}$$

$$15. \frac{x + y}{6} \div \frac{x^2 - y^2}{3} \cdot \frac{1}{2(x - y)}$$

$$16. \frac{3x + 6}{x^2 - 9} \div \frac{6x^2 + 12x}{4x + 12} \cdot \frac{2}{x(x - 3)}$$

$$17. \frac{2s^2 - 7s - 15}{(s + 4)^2} \div \frac{s^2 - 10s + 25}{s + 4} \cdot \frac{2s + 3}{(s + 4)(s - 5)}$$

$$18. \frac{9 - a^2}{a^2 + 5a + 6} \div \frac{2a - 6}{5a + 10} - \frac{5}{2}$$

$$19. \frac{\frac{2x + 1}{x}}{\frac{4 - x}{x}} \cdot \frac{2x + 1}{4 - x}$$

$$20. \frac{\frac{x^2 - 9}{4}}{\frac{3 - x}{8}} - 2(x + 3)$$

$$21. \frac{\frac{x^3 + 2^3}{x^2 - 2x}}{\frac{(x + 2)^3}{x^2 + 4x + 4}} \cdot \frac{x^2 - 2x + 4}{x(x - 2)}$$

22. **GEOMETRY** A right triangle with an area of $x^2 - 4$ square units has a leg that measures $2x + 4$ units. Determine the length of the other leg of the triangle.
 $x - 2$ units

23. **GEOMETRY** A rectangular pyramid has a base area of $\frac{x^2 + 3x - 10}{2x}$ square centimeters and a height of $\frac{x^2 - 3x}{x^2 - 5x + 6}$ centimeters. Write a rational expression to describe the volume of the rectangular pyramid. **$\frac{x + 5}{6} \text{ cm}^3$**